Minuteman Repeater Association

The Minuteman

Volume 55 Number 1 September 2025
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The Minuteman Repeater Association is a non-profit organization providing communications infrastructure and volunteers for community and emergency events.

Membership Meeting: Wednesday, 17 September 2025 ~7:30 - 9:30 pm

Technicians, Life Beyond Repeaters

Anthony Luscre - K8ZT

This is a Hybrid meeting: New England Sci-Tech + ZOOM

(Directions to New England Sci-Tech on Page 4)

Members: log into your account on MMRA.ORG to obtain the ZOOM info.

The session will examine the historical and current status of Technician Class allocations and operating in the USA. We also explore operations beyond VHF/UHF Repeaters, including:

- Technician HF Allocations: 10 M SSB & Data | 80, 40, 15 & 10 M CW
- VHF/UHF Activities: Simplex (FM, SSB) | Digital (FT8/FT4, VARA FM)
  Satellites | 6 Meters | EchoLink | APRS | Fox Hunting | EME (Earth-Moon-Earth)
- Contesting
- Amateur Radio Mash Ups

First licensed in 1981 as KA8NRC, Anthony has been a QRP operator from his very first QSO and became K8ZT in June 2000 after updating to Extra Class. His favorite Ham activity is operating! Whether it is contesting, DXing or rag chewing, satellites, etc. CW Phone or Digital, the QRP contacts have added up and now top 115,000. First drawn to contesting by his love of working DX, he has consistently finished in the top ten of various major contests and finished first in the World and US in both CQ Worldwide Phone and CW QRP categories multiple times. As a bonus, his QRP DXCC total recently topped the 328 mark, and he has completed 11-band WAS QRP.

Now retired, Anthony's background includes 20 years as a Medical Technologist working in Clinical Microbiology and private computer consulting and 20 years as a Computer Technology Coordinator, most recently as a Technology Integration Specialist for 30 school districts. His retirement activities include volunteering as a Trainman on the Cuyahoga Valley Scenic Railroad. His small suburban lot is cramped with a modest array of antennas, proving that you can be competitive in contests without acres of aluminum if you choose your entry category carefully.

Anthony currently serves as ARRL Ohio Section Youth Coordinator. He enjoys sharing his Amateur Radio interests with others by maintaining a website, k8zt.com, writing articles for various publications, the DX Engineering blog "On All Bands," and developing an online course, "Introduction to Contesting," for the ARRL. He has done over 400 club presentations and classes virtually in multiple states and countries.

In 2024, Anthony was awarded the Dayton Hamvention Special Achievement Award for his work in presentations to clubs around the world.

Results of Annual Meeting Elections

President	David Hornbaker, N1DCH
Vice President	John Spencer, WA1MDD
Secretary	Ken Horton, KA1GFN
Treasurer	Kevin Paetzold, K1KWP
Clerk	Stephen Babbitt, KC1LPZ
Director > 2027	Bob DeMattia, K1IW
Director > 2027	Roger Coulson, WA1NVC

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President's Corner ~ David Hornbaker, N1DCH

Welcome to the 2025-2026 MMRA Membership year!

The Quincy repeater has been removed from service. The repeater will be repaired (the link radio had failed). Once repaired, the repeater will be installed at MRE while arrangements are made for a new site in the Quincy area.

All MMRA memberships expire on August 31 of the membership year. Please check your profile and if your membership expired in 2025, please renew. Renewals may be done on the website, or you can mail your renewal to Minuteman Repeater Association, PO Box 669, Stow, MA 01775-0669. Please allow 7 days for us to process your renewal. Please allow 14 days for renewals that are mailed. While you're on the website (https://www.mmra.org) checking your expiration date: **please verify your email address.**

Please note that Family memberships have been eliminated. The original purpose of family membership was to reduce mailing costs back when newsletters were mailed each month.

The board also approved Junior memberships, a free membership for anyone age 18 and under

I would like to thank those that stopped by the MMRA booth during HamXposition. It was great seeing you in person! We had 2 new members sign up, 8 new hams applied for free membership, and 22 renewals. Raffle tickets sales totaled $187.

Once again, the MMRA VE team lead by Ron – WO1E, conducted all three VE sessions on Saturday and Sunday. The team administered a total of 21 tests during the weekend. See below for a complete report.

I would like to thank Mike LeBlanc Director, IT Operations, Imperial Distributors, for the generous donation of 20 tablets to the MMRA VE Team. This donation was key to the team moving to electronic testing.

Congratulations to the raffle winners and special thanks to those who participated in the MMRA raffle.

Join us for the September 17, 2025, membership meeting at New England Sci-Tech in Natick, MA. Anthony Luscre – K8ZT will present Technicians, Life Beyond Repeaters. If you cannot make it to Natick, this is a hybrid meeting, and the Zoom meeting information is available on the website (www.mmra.org). You must be logged into the website to view the information.

Check out the September 10, 2025, Elmer/Mentor Forum. There is an excellent transfer of knowledge for both old and new hams. For more information see: https://mmra.org/elmerforum/

Join us Tuesday nights at 8:00 PM for our weekly Technical Information and Other Stuff (TIaOS) net. There will be a lively discussion on all sorts of HAM issues, including equipment, antennas, software, repeaters, and other stuff. The main purpose is to test our ability to link up the repeaters in case of an emergency, or to support some event like a marathon. You can also join via EchoLink. See below for more information.

You can find out more information about how and when the repeaters are linked on the website (https://www.mmra.org/repeaters/repeater_linking.html).

Please remember to keep your profile up to date, especially if your email changes. Note that if your callsign changes, send email to contact@mmra.org and we will update your callsign in the database.

President's Corner ~ David Hornbaker, N1DCH

Upcoming MMRA VE sessions:

The September VE Session will be held on Saturday, September20th at 9:00 AM, at the Marlborough Central Fire Station, 215 Maple St (RT 85), Marlborough, MA:

https://www.bing.com/maps?q=215+maple+st+marlborough+ma&FORM=HDRSC4

The October VE Session will be held on Saturday, October18th at 9:15 AM, at the Marlborough Public Library, David Meeting Room, Marlborough, MA:

https://www.bing.com/maps?q=22+Witherbee+Street+Marlborough%2C+MA+01752&PC=U531&FORM=ANCMS9

For more information and a link register in advance see http://www.mmra.org/Exam .html. Walk-ins are welcome.

Please remember to bring a State ID, your FRN, and if upgrading, a copy of your current license (from FCC website) or proof of license from ARRL or QRZ website. For more information, contact Ron – WO1E at ve@mmra.org or wo1e@mmra.org.

Net Control Operators wanted! Interested in becoming a control operator for the TIaOS net? Larry is looking for a back-up operator. Contact Larry Banks – W1DYJ: w1dyj@mmra.org.

Do you know someone that has passed the Technician test (element 2) in the last year? They are eligible for free membership in MMRA. Have them send email to contact@mmra.org requesting membership. The club secretary will contact them with details on how to qualify.

73

Dave – N1DCH

The Amateur's Code ~ Paul M. Segal, W9EEA, 1928

The Radio Amateur is:

CONSIDERATE...never knowingly operates in such a way as to lessen the pleasure of others.

LOYAL...offers loyalty, encouragement and support to other amateurs, local clubs, and the American Radio Relay League, through which Amateur Radio in the United States is represented nationally and internationally.

PROGRESSIVE...with knowledge abreast of science, a well-built and efficient station and operation above reproach.

FRIENDLY...slow and patient operating when requested; friendly advice and counsel to the beginner; kindly assistance, cooperation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

BALANCED...radio is an avocation, never interfering with duties owed to family, job, school or community.

PATRIOTIC...station and skill always ready for service to country and community.

Treasurer's Report ~ Kevin Paetzold, K1KWP

The MMRA receives donations each year. On behalf of the club I would like to acknowledge and thank the following members who have donated since my list in the May newsletter: **K1DSL, K1THE, KA1GDQ, KA1SC, KB1MSR, KC1CLA, KC1KVY, KC1LNQ, KC1OXG, KC1QMC, KC1UDZ, KC1VHD, KC1VKP, KC1VZH, KD1TE, KX1M, N1ECC, N1MSK, NW1S, W1GMM, and WE5SST.**These donations since May totaled almost $1000.Hopefully I did not miss anyone on this list.

I only count paid memberships (I am the treasurer :-). So far **228** members have either renewed or recently joined. *From a pure money perspective that indicates **34** members who have not yet renewed or recently joined*. That also means we will probably only have an about $920 in additional dues we can expect to receive (between now and May 31, 2026). In actuality **44** active members who entered grace period on Sept 1 have not yet renewed.

The relocation of the Billerica repeater is and has been waiting on approval of an MOU (memorandum of understanding) between MMRA and Billerica government. The MMRA does not have MOUs for most sites so this seems like a good thing. However what is not so good is that we will now have to agree to pay a rent of $400/year and we will have to pay for power. This was not true before the ravens blocked the antenna install at end of April. *That now means the Billerica repeater will have recurring yearly costs to the club of $750/year without any maintenance/repair costs. That requires 30 memberships to support.* The membership previously voted to allocate $3000 to moving this repeater. About $1129 was spent on the 220 antenna. The remaining $1871 is expected to cover remaining costs (mostly the climber) to get the repeater back on the air.

MMRA repeaters are open to all hams. However I am **very disappointed** in the lack of apparent membership support that this repeater has received from the ham community in and around Billerica. The board (and myself personally) have been asked multiple times when the repeater is coming back from non members Heavy users (defined as multiple hours per day every day) **explicitly refuse** to join the MMRA when asked.

The membership was asked in May to vote on a $5500 expenditure to relocate the Quincy .67 repeaters. A new site (which is not in Quincy) has been identified and hopefully be a done deal soon. Now that a new site is somewhat known it is expected that we would not have to pay for power (for ourselves or for the City of Quincy's usage). At the current rate with the **city's wasteful/excessive power use** this will save the club about $750 a year. That savings will finance the new recurring cost of the Billerica repeater.

I did not put any overall financial numbers or pie charts into this article. Things are quite fluid with the Billerica and Quincy projects. When things are more clear I will make that info available.

73, **K1KWP**

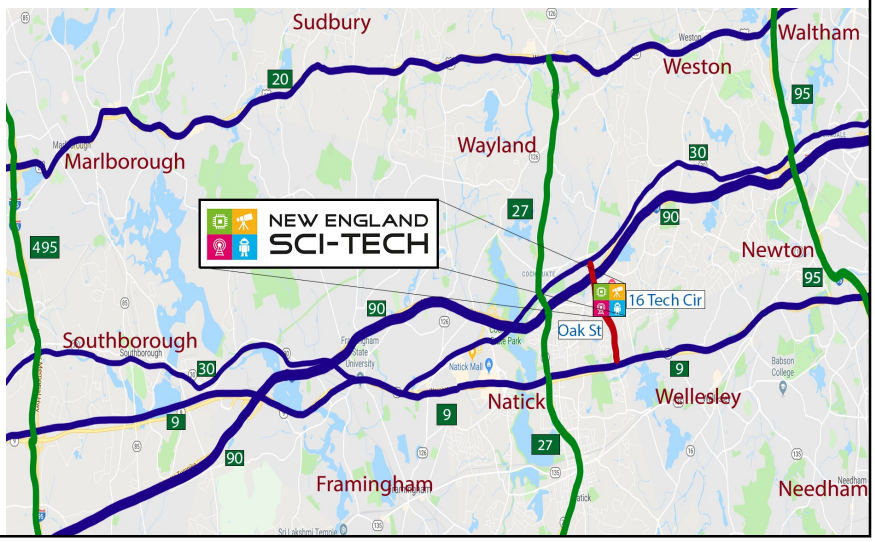
Directions to New England Sci-Tech Inc.

16 Tech Circle **Directions** Natick MA 01760

From the north: take Rt 95 or Rt 27 or Rt 495 south to Route 30 toward Wayland. Once in Wayland, turn South on Oak Street and in 1/2 mile look for Tech Circle on your left. Follow Tech Circle to the end.

From the south: take Rt 95 or Rt 27 or Rt 495 north to Route 9 toward Natick. At the Wellesley-Natick line, turn North on Oak Street and in 1/2 mile look for Tech Circle on your right. Follow Tech Circle to the end.

From the east or west: follow either Rt 30 or Rt 9 toward Natick, turn onto Oak Street at a set of traffic lights, and in 1/2 mile look for Tech Circle. Follow Tech Circle to the end.



Repeater Updates ~ The Quick, the Wait, and the Stalled

FIRST, the Quick: Boston 900 Upgrade ~ Roger Coulson, WA1NVC

The Old MSF5000

The Boston Waterfront (OFC) 900 MHz Repeater is being replaced.

The old and Heavy (~500 lbs) Motorola MSF5000 put in place back in 2009 is being upgraded to a Motorola Quantar. The Quantar is newer, lighter, and has more capability.

The new Boston Waterfront (OFC) 900 MHz Repeater has an Scom 7330 controller with both Allstarlink (ASL) and IRLP attached. The repeater also has P25 network capability. The Boston and Marlboro 900 MHz repeaters have identical hardware configurations and capability.

The New Quantar

The new repeater has been running (and burning in) in Ashland. Once the port switching in the Scom 7330 is working and we have a date for install the repeater will be installed at OFC.

NOW, the Wait: Billerica ~ Bob DeMattia, K1IW

Those of you who receive our MMRA email reports and read the Newsletter are up-to-date on the situation at the Billlerica site. Here is a brief recap:

The ravens finally flew the nest…

Unfortunately the delay meant that we are still waiting for official word that our MOU with the town has been signed and we can install our antennas. Note that we will be paying for both electricity plus $400/year rental of the shelter, estimated to be $750/year. Our Treasurer Kevin, K1KWP, notes in his article on page 3 that we expect to spend $3000 to move this repeater, more than half of which has already been spent.

The photo to the right shows the repeater system all ready to go, just waiting for antennas.

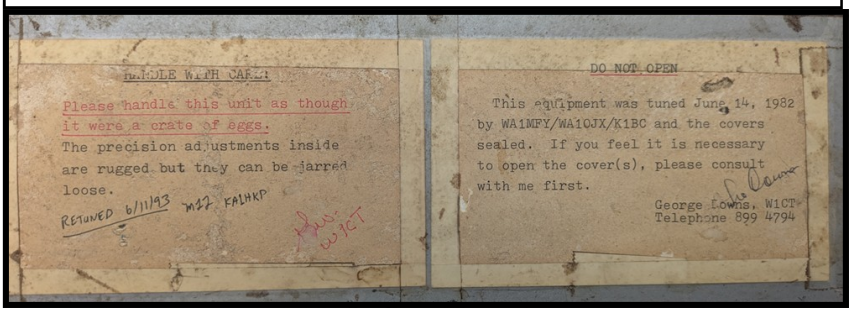
Repeater Updates ~ The Quick, the Wait, and the Stalled

FINALLY, the Stalled: Quincy ~ Bob DeMattia, K1IW

At the end of June, the Quincy repeater link radio failed. This, coupled with a power bill 2.5x due to the city's equipment, an already-failed internet control link, and two years of no cooperation from the city to find a new site, forced our decision to pull the Quincy repeater at the end of August. On 27 August, Kevin (K1KWP) and I removed the repeater and brought it back to my garage for maintenance. When it is back up to spec, it will be installed at the Marlborough East location until a new location is secured. The membership voted earlier to spend $5500 to move this repeater.

The former Quincy repeater closet.

Some History: I found this taped to the top of the duplexer cabinet, which you couldn't see because it was under the wooden shelf. June 1982 coincides with the time the repeater was moved to Forbes Hill. I had just completed my junior year in college. If it wasn't for the retuning in 1993, I could say that duplexer was sitting under that shelf for 43 years!


Please handle this unit as though it were a crate of eggs.
The precision adjustments inside are rugged but they can be jarred loose.
RETUNED 6/11/93
DO NOT OPEN
This equipment was tuned June 14, 1982 by WA1MFY/WA1QJX/K1BC and the covers sealed. If you feel it is necessary to open the cover(s), please consult with me first.
George Downs, W1CT
Telephone 899 4794

The repeater as it was being brought back to my house.

The Quincy Saga: K1IW's Log

This will help our members understand what the club has been doing with the Quincy repeater.

April 2, 2022: New Kenwood-based MMRA repeater installed in Quincy.

May 7, 2022: MMRA member and Quincy Parks Department employee Paul sends us a structural condition assessment done for the city about the Forbes Hill building.

July 11, 2023: Paul tells us we should begin plans for the possible temporary relocation of the repeater while renovations are being done. In this intervening period, multiple trips are made, sites are researched and reviewed. *A site is selected and a comprehensive plan for a new site is developed. MMRA board approves $5500 for a new shelter, antennas, and cabling.*

May 8, 2024: A letter to the Mayor's office is sent via UPS describing the plan and requesting a meeting to discuss.

July 30, 2024: After not receiving a response, I contacted the mayor's administrative assistant, Mary. She had no record of the letter (despite UPS confirming receipt). An electronic copy is sent to her.

August 24, 2024: After still receiving no response, I contacted Mary by phone. She assured me the mayor's chief of staff would reach out. I asked if she could schedule a meeting for us to discuss, but she says the chief of staff does his own scheduling and insisted that he would be reaching out.

November 24, 2024: Still no contact. Spoke to Mary again, but got the same answer as in July. *At this point Paul indicates that there was a past issue (2007) with a person not involved with the MMRA, where the view of amateur radio was negatively impacted by a "cast of characters" under the auspices of "Auxiliary police/civil defense/citizens police/CERT" and this could be the problem.*

December 17, 2024: Kevin indicates that power usage has tripled at Quincy. We believe someone has left the lights on in the building. I asked N1JSM to check the power situation at Quincy. He indicates he is out of town but will check on the following Saturday when he gets back.

Repeater Updates ~ The Good, the Bad, and the Ugly

FINALLY, the Stalled: Quincy ~ Bob DeMattia, K1IW—continued

December 31, 2024: I follow up with N1JSM about the power.

January 2, 2024: I ask N1KUG to check the power.

January 8, 2024: N1KUG reports he found the building unlocked and the lights were all on. He shuts off the lights.

January 9, 2024: N1JSM replies that for multiple reasons he has been unable to visit. I send a letter to one of the city councilors (a distant relative) asking if he could assist with getting us some traction with the mayor's office (to this date, I have not received a reply)

January 16, 2025: A follow up visit by N1KUG finds the door unlocked again and the lights back on with a note from persons unknown asking that they not be turned off. Evidently, a power circuit for the city's meter reading equipment had failed and that equipment was now plugged into the light circuit, so the lights now have to stay on. *An appeal was made to MMRA members, especially those who live in Quincy, to help with our efforts.* Office phone numbers and city of Quincy emails for contacting various city officials were given I contacted the water department to tell them about the unlocked door situation. The manager is concerned. I also take this opportunity to tell him about our situation and how we've identified a different site that is also under the auspices of the water department. He is OK with the new location, but says we should check with the city radio officer and then talk to his boss.

January 20, 2025: A talk with the radio officer is positive. I send him our plans and he is good with it, but indicates we will need approval from the mayors office. In the following weeks, attempts to speak to the water department's boss, who reports to the mayor, are unsuccessful.

February 2025: Kevin reminds the board of the increase in power usage. Bill is 2.5x what is was before $80 vs. $30/mo.

March 10, 2025: I enlist the service of MMRA member Jay, AB1II, a Quincy resident to help work with the city. Shortly thereafter the opportunity at another non-Quincy comes up and I tell Jay to hold off.

March 23, 2025: I visit our contact at this other site. Everything looks good. It will be a few days to get approval.

May 30, 2025: Days are now weeks. Evidently there is an electrical power issue at the site which is causing major work by National Grid. Our contact informs us that we are going to have to wait until this is sorted out. This is confirmed by an MMRA trustee associated with this other site.

June 11, 2025: The Quincy control link goes out, we are unable to bring it back through reset

July 10, 2025: The Quincy link radio becomes erratic (evidently this was actually first noticed at the end of May)

Early August 2025: With the control link down, the link radio erratic, the power bill still 2.5x, *and no cooperation from the city,* the decision to pull the Quincy repeater at the end of August is made.

August 27, 2025: The Quincy repeater is removed from service for repair. After repair, it will be placed at Marlborough East (where there is an existing 2m antenna) for burn-in testing.

At this point, I'm still open to a relocation to the Quincy site that was selected but this would require someone to get a meaningful dialog to begin with the city of Quincy, preferably Quincy residents who stand a slightly better chance of getting this to happen than a non-Quincy resident.

Reinstallation at the Forbes Hill site is unviable. MMRA has discontinued the electric service at the site. Additionally, the security issues at the site are unreliable. On removal day, we found the lock for our equipment removed. Also, it is hazardous to access the location of the control link equipment on a landing on the iron staircase. Note that an MMRA officer fell through roof up to his thigh more than 15 years ago due to the poor condition of the location, even back then; it would have been more serious if other people were not there. Another MMRA officer fell 10-12 feet when the stair failed. That would have been seriously hurt if he did not fall onto leaves.

And of course, the situation at that site will necessitate another move.

20 May 2025 Annual Membership Meeting ~ Minutes

Called to order @ 7:30PM © 2025, MMRA

Elections of Officers & Directors –

The membership voted unanimously for the entire slate of officers and directors. The Officers' term expires on May 31, 2026 and the Directors' term expires on May 31, 2027.

President – David Hornbaker, N1DCH
Vice President -John Spencer, WA1MDD
Secretary – Ken Horton, KA1GFN
Treasurer – Kevin Paetzold, K1KWP
Clerk – Stephen Babbitt, KC1LPZ
Director – Bob De Mattia, K1IW
Director – Roger Coulson, WA1NVC

Vote on Emergency Fund –The membership voted unanimously to allocate $4,000 for unexpected event(s) that may arise.

Vote on Quincy/Site relocation: $5,500: This vote passed by the membership.

Repeater Status Report: - Bob DeMattia – K1IW—5/20/2025 Status

Burlington -145.43 (ex-Belmont) –Now installed and operational, but the receiver has limited functionality. Bob will need to do an onsite visit to fix the problem. Duplexer is not providing enough isolation – will need to install additional rejection or reduce transmitter power.

Quincy 146.67 & 224.400 – Continuing to work on a new location. A membership vote was made tonight to allocate $5,500 for the relocation.

Weston – 146.79 – Antenna SWR is still high, but repeater works. Bob is planning an onsite visit late Spring or early Summer.

Billerica 147.12 –Equipment remains onsite. The antenna remains with the installer. We are waiting for the birds to de-nest probably in about a month. In the meantime, the town resolved the shed storage issue by allowing us to use the shed by ourselves rather than sharing it with the fire department. The shed also has emergency power.

Lowell – 442.250 - The link transmitter has begun working again on its own. It is putting a strong signal into HUB1.

Brookline 145.160–(DSTAR) Both the receiver and transmitter are not working.

Reading – 446.775 – Problems were reported. No specifics.

Marlborough DSTAR is back on the air with a new PC. Thanks to Terry – KA8SPC for building up the new computer, James – N1DDK for donating the SSD, Bob – K1IW donated the PC and Kevin – K1KWP who provided transportation..

Hub1 – Link Radio (to NH) is being repaired.

All other Repeaters: Functioning normally.

Bob also suggests the MMRA consider future replacement plans on these repeaters: Marlborough.'27, Mendon '.61, Lowell '.25, & Brookline DSTAR. These are our remaining 2m/440 Mastr-IIs. Bob already has Quantar replacements for the first two, donated by Bernie, N1IMO.

20 May 2025 Annual Membership Meeting~ Continued 2

Membership Changes –

Family Memberships have been eliminated

Existing Family Memberships were converted to Individual memberships for all members under the Family Membership.

Expiration date for all Family membership conversions will be the expiration date of the Family membership prior to the conversion.

Junior memberships are available to those members under 18.

Birth year will need to be entered in the membership profile on the MMRA website.

No Charge

Junior memberships will need to be renewed annually.

Elmer/Mentor Forum – Kevin – K1KWP –

Thanks to Kevin for mentoring this Zoom Program which occurs on the 2nd Wednesday of each month since our first session this past November. Participants have been active with great questions. Initially leading these monthly sessions was Kevin. Alternate leaders started In April with Ken, KA1GFN. Larry, W1DYJ, led the May session and Stephen, KC1LPZ, will lead the June session. All of us have been learning from these sessions regardless on whether one is newly licensed or a long time Ham veteran. The June session is scheduled on 6-11-25 at 7:30 PM on Zoom. All are welcome so please check our website for the Zoom information.

HamXposition–August 21-24, 2025, in Marlborough

The MMRA Table will be in the same location as last year.

The MMRA VE Team will be providing license exams.

Volunteers are needed for the booth. **Please volunteer a little time to man the table**.

ARRL certified VEs are welcome to join our VE team

Email ve@mmra.org

There will be a special MMRA Newsletter edition produced for the HamXposition.

Raffle Prizes – The 2nd and 3rd prize items have been donated. The first prize has been purchased.

License Exam Session–June:

Saturday, June21, 2025, at 9:15 AM

Online Registration

Walk-Ins Welcome

Marlborough Public Library Meeting Room 1, 18 Witherbee St, Marlborough MA 01752.

Please tell your friends, who are interested in taking tests, that they must have photo IDs and FRNs (and please **obtain your FRN# f**rom the FCC Website **prior to arrival**).

Copy of license required if upgrading (or proof from the ARRL or QRZ)

Note: SS#s, are no longer accepted by the FCC. Everyone must have an FRN.

License Exam Session – August: 23-24 — HamXposition

Location Westborough Room,

Best Western Royal Plaza Hotel & Trade Center

181 Boston Post Road West, Marlborough MA 01752

20 May 2025 Annual Membership Meeting~ Continued 3

FY 26 Speakers for Membership Monthly Meetings – Dave, N1DCH – The list of speakers has been confirmed. Please see the list in Upcoming Meetings section.

Upcoming Meetings

June 11, 2025, 7:30 PM
Elmer/Mentor Forum on Zoom
June 18, 2025, 7:30 PM
Business Meeting — Zoom
August 24, 2025, 12:00 PM
HamXposition – Royal Plaza Hotel, Marlborough MA
Introduction to MMRA and Raffle
September 17, 2025, 7:30 PM — Membership Meeting
Technicians, Life Beyond Repeaters — Anthony Luscre, K8ZT
NE Sci-Tech and Zoom
October 15, 2025, 7:30 PM
Business Meeting — Zoom
November 19, 2025, 7:30 PM— Membership Meeting
Antenna Modeling Part 1 EZNEC — Larry Banks, W1DYJ
Marlborough Central Fire Station and Zoom
December 17, 2025, 7:30 PM
Business Meeting — Zoom
January 21, 2026, 7:30 PM— Membership Meeting
Introduction to IT-65 & WSPR — Charles Bures, WA3TR
NE Sci-Tech and Zoom
February 18, 2026, 7:30 PM
Business Meeting — Zoom
March 18, 2026, 7:30 PM
How to Precisely Calibrate Your Transceiver — George Allison, K1IG
NE Sci-Tech and Zoom
April 15, 2026, 7:30 PM
Business Meeting— Zoom
May 20, 2026, 7:30 PM
A Technician's Journey: From HT to HF — David Kula, KC1VZH
Membership Meeting and Annual Elections & Emergency Fund Vote
LOCATION: TBA
Tuesday night at 8:00 PM (year-round)
Technical, information and Other Stuff Net
MMRA Linked Repeaters

20 May 2025 Annual Membership Meeting~ Continued 4

Presentation by Anthony Luscre, K8ZT

10 Worst Antennas for Amateur Radio and How You Can Do Better

Anthony was first licensed in 1981 as KA8NRC. He has been a QRP Operator from his very first QSO (no one told him Novices should not start with a 2-watt QRP rig). He changed his call sign to K8ZT in June 2000 after updating to Extra Class License.

He is active in a variety of Amateur Radio activities, but his favorite activity is operating – whether it is contesting, DXing, rag chewing or satellites, etc. CW Phone or Digital, the QRP contacts have added up and now top 115,000. Anthony was drawn to contesting by his love of working DX and has consistently finished in the top ten of various major contests and finished first in the World and US in both CQ Worldwide Phone and CQ QRP categories multiple times. As a bonus, his QRP DXCC total recently topped the 328 mark, and he has completed 11 band WAS QRP.

His presentation had a bit of serious humor as he initially mentioned a lousy antenna is better than "No Antenna". He continues with an unpacked "In the box" antenna to an assembled, but not installed antenna to an improperly assembled to an antenna improperly installed and/or poor feedline to an antenna without the required counterpoise. He continues with an antenna not suited for a desired band to delve deeper into this subject by describing the wrong Take Off Angle for the target geographic area to no back up antenna for portable operations along with the various types of antennas used by Hams. The best summary can be found by going to **tiny.cc/worst-ant**. Another general link for all the Ham Subjects Anthony has extensively covered can be found on his website: www.k8zt.com .

The video is available at:
https://drive.google.com/file/d/13iKmlThix0rh-fvIDIFjf8a_ULvj2jTy/view?usp=sharing
The slides are available at: http://tiny.cc/worst-ant

K8ZT has a website full of many presentations and lots of other ham radio stuff.
See: https://www.k8zt.com/

Meeting Attendees at New England Sci-Tech, Natick MA
David Hornbaker, N1DCH; Ken Horton, KA1GFN; Deb Horton, N1NVJ; Larry Banks, W1DYJ; Kevin Paetzold, K1KWP; Stephen Babbitt,KC1LPZ; Brian BodiyaKC1WIH; Bob Phinney, K5TEC; Bruce De Graf. LC1IUS; Mark Dooley, KC1VUX; Glenn Ghidaleson, WA2KRS; Bill McIninch, WA1MOM;

Zoom Meeting Attendees:
John Spencer, WA1MDD; Stephen Contrado, KC1VJH; Bob Evans, N1BE; Jonathan Traum, K1BTZ; Roger Coulson, WA1NVC; Joe Weisse, W1HAI; Jane Eastman, KC1VHN; David Kula, KC1VZH; Kenny Pelusso, KC1PFS; Glenn Axerod, KC1HPZ; Tom Sullivan, KC1VHD; Frank Cummings, KC4BFD; Jim Babb, AA1BA; Joe Fratto, K1UN; Anthony Luscre, K8ZT;

Meeting Adjourned at 9:03PM
Respectfully Submitted by Stephen M Babbitt, KC1LPZ, Clerk

HamX - The Northeast HamXposition
August 21-24, 2025

MMRA Exam Team (VE) Update ~ David Hornbaker, N1DCH

The MMRA VE team held three sessions during this year's HamXposition. Over the three sessions, there were a total of 21 tests given resulting in: 10 new technicians, 7 upgrades to General, and one Extra.

Congratulations to Ethan C. Geil – AC1UX who started the day unlicensed and left with an Extra ticket.

New this year, all testing was done electronically.

MMRA @ HamXposition ~ Larry Banks, W1DYJ

MMRA members turned out in force at the recent *New England HamXposition*. Kevin, K1KWP, managed our booth while Ron, WO1E, our VEC Liaison ran the three exam sessions held over the weekend.

W1DYJ Photo

Booth Captain and Club Treasurer Kevin, K1KWP, and Club Secretary Ken, KA1GFN

KK1RZ Photo

MMRA at the Saturday Night Dinner

We also had a club table at the evening banquets where we enjoyed each other's company as well as the excellent talks.

Raffle Drawing Winners

First - BTech Mobile Radio	Juan, K1CPR
Second - Jumbo Hot Spot	Anthony, KC1QMC
Third - Radiodity GC-5 HT	Arthur, N1MSK (donated back)

If you didn't attend, plan on doing so next year!

18 June 2025 Business Meeting ~ Minutes

Called to order @ 7: 32PM © 2025, MMRA

HamXposition–August 21-24, 2025, in Marlborough

MMRA ad in the HamXposition book – W1DYJ

One Page Ad — Map of Repeaters will be updated as needed at last minute.

The MMRA Table will be in the same location as last year: Booth coordination – K1KWP

Volunteers are needed for the booth. **Please volunteer a little time to staff the table**.

Equipment: N1DCH – Antenna and coax K1KWP – Radio and Power Supply

Prizes 1st – BTech Mobile Radio

2nd – Jumbo Hot Spot

3rd -- Radiodity GC-5 HT

The MMRA VE Team will be providing license exams in the Westborough Room

Saturday 9:00 AM Saturday 1:00 PM Sunday 10:00 AM

More Information at http://hamxposition.org/license-exam-sessions/

ARRL certified VEs are welcome to join our VE team: Email ve@mmra.org

Newsletter

There will be a special MMRA Newsletter edition produced for the HamXposition.

Information to Larry, W1DYJ

Due date: Friday,August1, 2025

Publish Date: August 11, 2025

Email W1DYJ@mmra.org

Repeater Status Report: - Bob DeMattia – K1IW –6/18/2025 Status

Hub1 449.925 – NH Link transmitter has been reinstalled and is working well.

Marlborough 147.27 – Link transceiver has been replaced to fix tone issue

2m TX PL output is a little low needing adjustment.

Burlington - 145.43- (ex-Belmont) –The duplexer is not providing enough isolation and will need additional rejection or reduce transmitter power.

North Reading -446.775 –is broken and has been sent to Yaesu for repair. The decision not to use our DR1 backup while waiting for its return was made.

Quincy 146.67 & 224.400 – Continuing to work on a new location. During the May meeting it was approved to allocate up to $5,500 for their relocation.

Weston – 146.79 – Antenna SWR is still high. The repeater works, but intermittently.

Billerica 147.12 –The repeater is onsite in the new shelter previously occupied by Lincoln Labs.

We need to work out some details with the Town Manager pursuant to rent before the antenna is installed. There will be an electric bill for the club at this location.

Brookline 145.160–(DSTAR) Possible output power issue.

Marlborough 927.700.- Now supports P25.

Boston 927.0625 – Upgrade to support P25 is being driven by WA1NVC**.**

All other Repeaters: Functioning normally.

Boston 900 upgrade – Roger – WA1NVC

Discussion of logistics of the upgrades, building access, parking, etc. was not finalized at this time.

18 June 2025 Business Meeting ~ Continued 2

Elmer/Mentor Forum – Kevin – K1KWP

Thanks to Kevin for mentoring this Zoom Program which occurs on the 2nd Wednesday of each month since our first session this past November. Participants have been active with great questions. The next session will be hosted by Dave, N1DCH.We have been learning from these sessions regardless of whether one is newly licensed or a long time Ham veteran. All are welcome so please check our website for the Zoom details.

Exam Session – June:

Saturday, June 21, 2025, at 9:15 AM
Online Registrationis the preferred option.
Walk-Ins are still Welcome
Marlborough Public Library Meeting Room 1, 18 Witherbee St, Marlborough MA 01752.
Please tell your friends, who are interested in taking tests, that they must have photo IDs and FRNs (and please **obtain your FRN# f**rom the FCC Website **prior to arrival**).
Copy of license required if upgrading (or proof from the ARRL or QRZ)
Note: SS#s, are no longer accepted by the FCC. Everyone must have an FRN.

Exam Session – August: 23-24 HamXposition

Location Westborough Room,
Best Western Royal Plaza Hotel & Trade Center
181 Boston Post Road West, Marlborough MA 01752
More Information at http://hamxposition.org/license-exam-sessions/

Upcoming Meetings

August 24, 2025, 12:00 PM
HamXposition – Royal Plaza Hotel, Marlborough MA
Introduction to MMRA and Raffle
September 17, 2025, 7:30 PM — Membership Meeting
Technicians, Life Beyond Repeaters — Anthony Luscre, K8ZT
NE Sci-Tech and Zoom
October 15, 2025, 7:30 PM
Business Meeting — Zoom
November 19, 2025, 7:30 PM— Membership Meeting
Antenna Modeling Part 1 EZNEC — Larry Banks, W1DYJ
Marlborough Central Fire Station and Zoom
December 17, 2025, 7:30 PM
Business Meeting — zoom
January 21, 2026, 7:30 PM— Membership Meeting
Introduction to IT-65 & WSPR — Charles Bures, WA3TR
NE Sci-Tech and Zoom
February 18, 2026, 7:30 PM
Business Meeting — Zoom
March 18, 2026, 7:30 PM— Membership Meeting
How to Precisely Calibrate Your Transceiver — George Allison, K1IG
NE Sci-Tech and Zoom

18 June 2025 Business Meeting ~ Continued 3

April 15, 2026, 7:30 PM
Business Meeting — Zoom
May 20, 2026, 7:30 PM— Membership Meeting/Annual Elections/Emergency Fund Vote
A Technician's Journey: From HT to HF — David Kula, KC1VZH
LOCATION: TBA
Tuesday night at 8:00 PM (year-round)
Technical, information and Other Stuff Net
MMRA Linked Repeaters

Meeting Attendees:

David Hornbaker, N1DCH; Larry Banks, W1DYJ; Kevin W Paetzold, K1KWP;Stephen Babbitt,KC1LPZ; Ken Horton, KA1GFN; Roger Coulson, WA1NVC; John Spencer, WA1MDD; Rob Evans, N1BE; Joe Weisse, W1HAI; David Kula, KC1VZH; Joe Fratto, K1UN; Brian Bodiya, KC1WIH; Stephen Contrado, KC1VJH;

Meeting Adjourned at 8:23PM
Respectfully Submitted by Stephen M Babbitt, KC1LPZ, Clerk

16 July 2025 Special Business Meeting

Called to order @ 7:31PM © 2025, MMRA

Subject of Discussion: The Repeaters in Quincy and Billerica MA

At the request from Bob, K1IW, this meeting was scheduled by Dave, N1DCH, to discuss how we will proceed with both these Repeater sites.

Quincy 146.67 & 224.400 – The Repeaters at this location are working okay. While we have a possible alternative site location, there is no urgency requiring us to move at this moment in time. Our alternative location is not ready yet and the City of Quincy is not requesting we leave. Informally the Board is okay with the status quo

Billerica 147.12 –The Equipment remains on site. The antenna remains with the installer. The Town of Billerica is allowing us to use the storage shed previously occupied by MIT's Lincoln Labs. This shed has its own electric power separate from the Town and when our Repeater is operational, we will be responsible for the electricity. Larry, W1DYJ, made a motion, 2nd by Dave, N1DCH, to proceed with the steps necessary to get the Repeater up and running and keeping the Town informed along the way. That motion was passed unanimously.

Addendum: Subsequent to this meeting, Bob was notified that the MMRA will be paying $400 per year plus the electric power we use. We are ready to move forward.

Zoom Meeting Attendees:

David Hornbaker, N1DCH; Ken Horton, KA1GFN; Larry Banks, W1DYJ; Kevin Paetzold, K1KWP; Stephen Babbitt,KC1LPZ; Roger Coulson, WA1NVC; Joe Weisse, W1HAI; Bob De Mattia, K1IW; James Lee, N1DDK; Bob Evans, N1BE; John Mullaney, K1BOS; Edward Curley, KC1CLA; Mike Rioux, W1USN;

Meeting Adjourned at 8:26PM
Respectfully Submitted by Stephen M Babbitt, KC1LPZ, Clerk

A 10m Ground Plane Antenna ~ David Hornbaker, N1DCH

A 10-meter ¼ lambda vertical ground plane antenna was erected in April. This was a ground mounted vertical antenna based on a YouTube video by Dave Tadlock – KG0ZZ[1]. My End Fed Half Wave antenna worked on 10 but it did not work well. The goal with this antenna was to be able to use the MMRA 10-meter repeater and to use the antenna to chase some DX on 10.

The antenna consisted of three, four-foot telescoping sections of 6061 aluminum tube with a total length of 100 inches. The antenna base was set into a short piece of PVC and clamped to an aluminum plate. Next, the aluminum plate was clamped to a galvanized steel pipe, which had been pounded into the ground. There were 16, 105-inch radials buried and connected to a DX Engineering ground plate[2]. The measured SWR is 1.1:1 on the digital portion of the band and 1.4:1 in the FM portion of the band. In addition, the SWR in the 12-meter band is 2.4:1 which my LDG antenna tuner easily handled. Recently, during the 13 Colonies event, it was discovered the antenna is also usable on the 30-meter band (using the tuner), although modeling indicates the power at the antenna ~2 watts.

Remember the antenna tuner just makes the transmitter see a reasonable impedance, from the antenna, it doesn't tune anything.

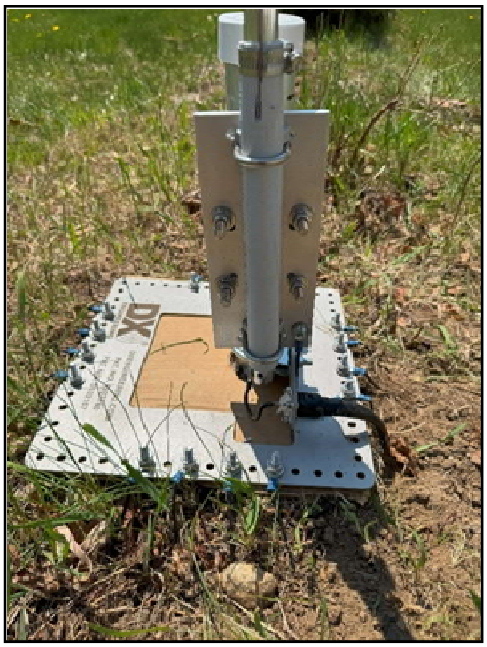


Figure 1 Antenna base plate and radial plate

Figure 2 10-Meter antenna

Construction

Trim and debur each piece of tubing to 4 feet long, remember to cut off the non-slotted end. Use the element clamps to assemble the antenna into an approximately 100-inch-long element. There will be a ~26-inch overlap for each tube.[3] Total length will be adjusted later when the antenna is tuned. Good results were achieved with 100 inches.

Cut two slots, 90° apart, into one end of the 1-inch PVC conduit. Make the cuts about 1-inch deep.

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1. https://www.youtube.com/watch?v=aLgFeTpIX4A&t=262s
2. KG0ZZ's original design had 4 radials and no radial plate
3. The top two tubes could be cut to 32 inches and still provide plenty of length for tuning. This prototype followed KG0ZZ measurements. I suspect his goal was not cutting the 4-foot tubes he already had so they could be re-used in another project.

A 10m Vertical—II ~ David Hornbaker, N1DCH

Slide the PVC onto the 0.75-inch end of the antenna. Use a 1-inch hose clamp to secure it to the antenna. There should be about an inch of the antenna extending below the PVC.

Mount the antenna assembly to the antenna plate using the 1-inch saddle clamps.

Using a small sledgehammer, pound the 2-inch pipe into the ground, and leave about 10-inches exposed.

Solder an approximately 2-inch 14-gauge copper wire to the SO-239 and mount the SO-239 into the radial plate.

Install the radial plate onto the mast using a 2-inch saddle clamp.

Mount the antenna base to the mast using 2-inch saddle clamps. Adjust the antenna so the exposed bottom is close to the SO-239. Trim the wire from the SO-239 to fit and add a ring terminal. Attach the ring terminal to the antenna using a #8 stainless self-drilling screw. Ensure that all the saddle clamps are tight.

Cut each wire from the REZ-ZQD-RK radial kit in half producing 16, 105-inch radials and install ring terminals on each radial. Attach 4 radials to each side and bury the radials.[4]

Tuning

Connect an Antenna Analyzer or a Nano VNA to the antenna; use enough cable so that you can be at least 25 feet from the antenna when measuring. Using the instrument, scan the 10-meter band. If tuning is needed, loosen the lower element clamp and adjust the middle tube and retest. In this case, the antenna did not require any further adjustment.

Testing

Initial testing was done using WSJT-X WSPR mode. WSPR was configured to transmit 20% of the time. Transmit power was 5 watts. The test was allowed to run for 2 days. I was heard in Europe and Oceana, and could hear stations across the US.

Figure 3 Transmit

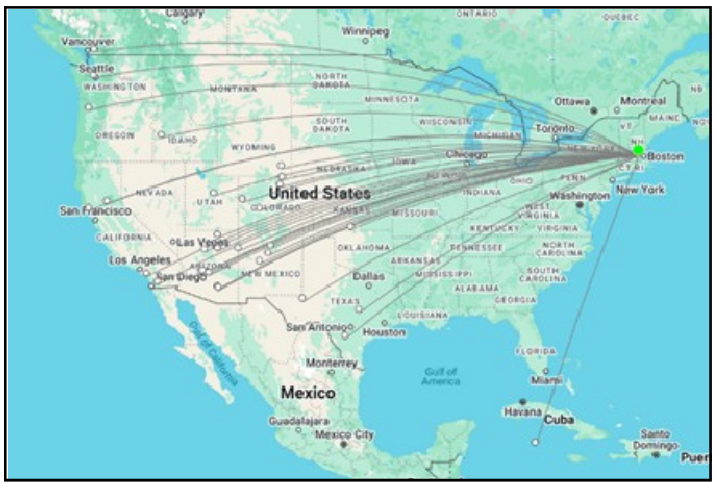

Figure 4 Receive

4. Radials on the ground or buried do not have to be resonate. 105-inch was chosen because the length of the original wires was 35-feet.

A 10m Vertical—III ~ David Hornbaker, N1DCH

Model

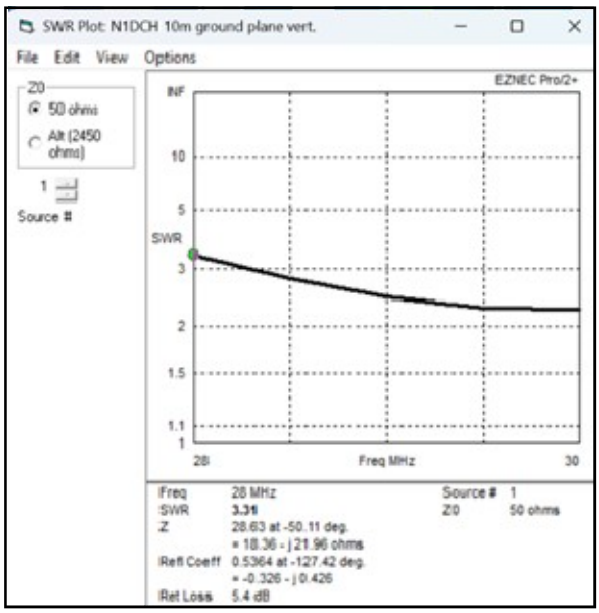

Figure 5 EZNEC modeled SWR

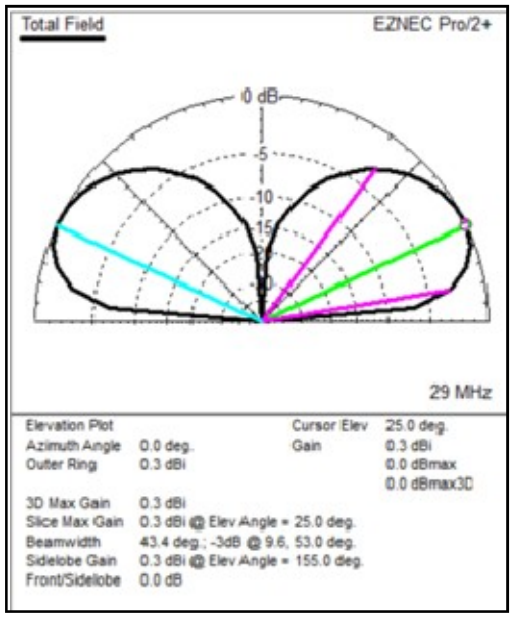

Figure 6 EZNEC 2D far field plot

My first attempt to create a model had several problems, mostly related to ground. Thanks to Larry Banks – W1DYJ who debugged the model and provided the graphs above. The model shows a higher SWR than the measured values. This might be because the NEC-2 engine doesn't handle radials well, especially buried radials.

Larry recently re-did the model with NEC-5 which handles buried radials better than NEC-2. This model indicated a SWR of 1.44:1 at 28.1 and 2.19 at 29.5

Antenna Parts List	
Item	DX Engineering Part number
DXE-112-KIT - DX Engineering Chassis Mount SO-239 Coaxial Connectors	Part Number: DXE-112-KIT
DXE-AT1206 - DX Engineering Aluminum Tubing 0.625"	Part Number: DXE-AT1206
DXE-AT1207 - DX Engineering Aluminum Tubing 0.750"	Part Number: DXE-AT1207
DXE-AT1480 - DX Engineering Aluminum Tubing 0.500"	Part Number: DXE-AT1480
DXE-BEP-4B - DX Engineering BEP-4B Antenna Plates	Part Number: DXE-BEP-4B
DXE-ECL-0625-10P - DX Engineering Element Clamps	Part Number: DXE-ECL-0625-10P
DXE-ECL-0750-10P - DX Engineering Element Clamps	Part Number: DXE-ECL-0750-10P
DXE-RADP-3 - DX Engineering Radial Plates	Part Number: DXE-RADP-3
DXE-SAD-100A - DX Engineering Saddle Clamps	Part Number: DXE-SAD-100A
DXE-SAD-200A - DX Engineering Saddle Clamps	Part Number: DXE-SAD-200A
REZ-ZQD-RK - REZ Antenna Systems [Z]QD Radial Kits	Part Number: REZ-ZQD-RK
1-inch gray PVC conduit 8 inches long	Local hardware store
2-inch galvanized pipe about 30-inches long	Local hardware store
1-inch stainless hose clamp	Local hardware store

Upcoming MMRA Meetings

Meetings usually start at 7:30 PM
Meeting locations and times are subject to change.
Consult the MMRA website for the most up-to-date information.

ZOOM Teleconference login info is available once you log into your account on MMRA.ORG

Non-members: if you wish to attend, email contact@mmra.org.

Elmer Forums / ZOOM: 9/10, 10/8, 11/12, 12/10
Business Meetings / ZOOM: 10/15, 12/17, 2/18, 4/15

September 17, 2025 Membership Meeting
Speaker: Anthony Luscre - K8ZT
Technicians, Life Beyond Repeaters
Location: New England Sci-Tech + ZOOM

November 19, 2025 Membership Meeting
Speaker: Larry Banks— W1DYJ
Antenna Modeling Part 1— EZNEC
Location: Marlborough Central Fire Station + Zoom

January 21, 2026 Membership Meeting
Speaker: Charles Bures - WA3TR
Introduction to IT-65 & WSPR
Location: NE Sci-Tech + Zoom

March 18, 2026 Membership Meeting .
Speaker: George Allison - K1IG
How to Precisely Calibrate Your Transceiver
Location: NE Sci-Tech + Zoom

May 20, 2026 Annual Meeting & Elections
Speaker: David Kula -KC1VZH
A Technician's Journey: From HT to HF
Location: TBA

Join Us! Every Tuesday @ 8 PM

Technical, Informational and Other Stuff Net

Keep up with what's happening in the MMRA and ask your ham related questions.

Net Control Operators:

Week 1	**W1DYJ**	**Larry Banks**
Week 2	**K1BTZ**	**Jonathan Traum**
Week 3	**K1KWP**	**Kevin Paetzold**
Week 4	**KC1VZH**	**David Kula**
Week 5	**KB1OQA**	**Tom Turner**

To connect using Echolink: Conference *NEW-ENG2*

NOTE: we need another NC to be available as a substitute. If you are interested, email: W1DYJ@mmra.org

MMRA Leaders

Executive Board — Officers

President	Dave Hornbaker	N1DCH
Vice President	John Spencer	WA1MDD
Secretary	Ken Horton,	KA1GFN
Treasurer	Kevin Paetzold	K1KWP
Clerk	Stephen Babbitt	KC1LPZ

Executive Board — Directors

Director >2026	Rob Evans	N1BE
Director >2026	James Lee	N1DDK
Director >2027	Bob DeMattia	K1IW
Director >2027	Roger Coulson	WA1NVC

Appointed, Voting

Technical Officer	Bob DeMattia	K1IW

Repeater Trustees

Billerica 147.12, 224.88	Mike Rioux	W1USN
Boston 146.82	John Mullaney	K1BOS
Boston 927.0625	Rick Zach	KK1RZ
Brookline 145.16	Joyce DeMattia	K1MRA
Burlington 145.43	Ed Curley	KC1CLA
Hopkinton 447.775	Bryan Cerqua	W1BRI
Lowell 442.25	Bob Phinney	K5TEC
Marlborough 53.81	Bryan Cerqua	W1BRI
Marlborough: 29.68, 144.39, 147.27, 223.94, 224.70 449.575, 449.925, 927.70 all as W1MRA	Bill Northup	N1QPR
Mendon 146.61	Kevin Paetzold	K1KWP
N. Reading 146.715	Bruce Pigott	KC1US
N. Reading 446.775	Larry Banks	W1DYJ
Quincy 224.40	Bill Dunn	N1KUG
Quincy 146.67	Bryan Cerqua	W1BRI
Weston 146.79	Joe Weisse	W1HAI
Weston 224.70	Bill Northup	W1MRA
Weston 442.70	Dave Hornbaker	N1DCH

Additional, non-Voting

Newsletter Editor	Larry Banks	W1DYJ
Emerg. Coord.	Kevin Paetzold	K1KWP
Pub. Serv. Coord.	Bruce Pigott	KC1US
VEC Liaison	Ron Rothman	WO1E
Net Manager	Larry Banks	W1DYJ
Web Page Editor	Bob DeMattia	K1IW

President Emeritus

Bob DeMattia K1IW

Technical Officer Emeritus

Bryan Cerqua W1BRI

About the Minuteman Repeater Association

MMRA Control Operators Responsibilities

https://www.mmra.org/MMRACOPolicy-March2019.pdf

The Minuteman Repeater Association (MMRA) is dedicated to Amateur Radio and public service. The MMRA maintains a large system of repeaters in Eastern Massachusetts.

The MMRA meets each month from September to June. Meeting times, locations, and talk-in frequency vary and are announced in this newsletter and on weekly nets. Meetings are open to all interested parties. Guest speakers and programs of general interest occur in September, November, January, March, and May. The intervening meetings are also open to all members and are for general business.

The Minuteman newsletter is emailed one week before each general interest meeting. Members are encouraged to submit articles: send to the editor at newsletter@mmra.org. The deadline for articles is the last Friday of the month preceding the meeting.

Each Tuesday evening at 8pm the MMRA links most of the repeaters for an open net. The topic is "Technical Information and Other Stuff". Join us!

Membership in the MMRA is open to all radio amateurs. Annual dues are $25 per individual or $35 per family. See our website for details.

Contact information is listed on the top of the last page of this newsletter.

MMRA QRM Policy

MMRA members and all other operators are strongly encouraged to report repeater activity that does not abide by Part 97 rules or accepted amateur radio practice to the board of directors at contact@mmra.org or via other means.

The most effective way (and probably the only effective way) to deal with an individual causing QRM is to NOT engage with that individual on the air. Please include the time and date of any incident.

Repeater and Frequency Information

Band	XMTR Location	Freq	PL	Call	Linking To: Hub 1	Hub 2
10m	Marlboro East	29.680	131.8	W1MRA	???	???
				Linked to 146.79: 9am-3pm every day		
6m	Marlboro East	53.810	71.9	W1BRI	PTL	PTL
	Remote receive Marlboro West: PL=100					
2m	Brookline	145.160	na	K1MRA	D-Star (REF050C)	
	Burlington	145.430	146.2	KC1CLA	FTL	PTL
	Mendon	146.610		K1KWP	FTL	PTL
	????	146.670		W1BRI	FTL	PTL
	North Reading	146.715		KC1US	FTL	PTL
	Weston	146.790		W1HAI	PTL	PTL
				Linked to 29.68: 9am-3pm every day		
	Boston	146.820		K1BOS	FTL	PTL
	Billerica	147.120		W1DC	PTL	PTL
	Output tone = 162.2					
	Marlborough	147.270		W1MRA	PTL	PTL
1.25m	Marlborough	223.940	103.5	W1MRA	FTL	PTL
	????	224.400		N1KUG	FTL	PTL
	Weston	224.700		W1MRA	PTL	PTL
	Billerica	224.880		W1DC	FTL	PTL
70cm	Lowell	442.250	88.5	K5TEC	FTL	PTL: 446.775
	Weston *	442.700	88.5	N1DCH	Network Hub 2 (PTL to Hub 1)	
	North Reading *System Fusion*	446.775	88.5 71.9 Local Link	W1DYJ	FTL [88.5]	PTL [88.5]
	Hopkinton *System Fusion*	447.775	88.5 71.9 Local Link	W1BRI	FTL [88.5]	PTL [88.5]
	Marlborough	449.575	na	W1MRA	D-Star (REF050C)	
	Marlborough *	449.925	88.5	W1MRA	Network Hub 1	
33cm	Boston *	927.0625	D244	KK1RZ	PTL	PTL
	Marlborough *	927.700		W1MRA	PTL	PTL
	PL out = 131.8					
Marlborough		144.390	none	W1MRA	APRS Digipeater	
???		145.630	146.2	W1MRA	Fox Box	

*Internet		
	HUB1– 449.925: IRLP node 4133 / Echolink node 4133 Connected to Echolink NEWENG2 conference (9127) for TIAOS net.	
	HUB2 – 442.700: IRLP node 4136 / Echolink node 4136 Connected to 220 Reflector 9124 on Tuesdays	
	927.0625: IRLP 4977 927.700: IRLP 4978	Normally linked to the NE900 Reflector, 9125. Linked to MMRA via "NEW-ENG2" node 9127 for the TIAOS net. Normally linked together.

Notes: FTL = Full Time Linked (or default state)
PTL = Part Time Linked (on schedule or demand)
A repeater can be linked to only one Hub at a time, however the two hubs can also be linked together.

Contacting the MMRA

Members: join mmra@groups.io
to receive member emails.
You must be approved by the moderator.
Officers: contact@mmra.org
Control Ops: control-ops@mmra.org

Minuteman Repeater Association
PO Box 2192
Littleton, MA 01460-3192

http://www.mmra.org/

https://www.facebook.com/mmraham

MMRA Amateur Radio Exam Sessions

Check out https://www.mmra.org/exam.html or email *ve@mmra.org*

Ask your friends to become a member **Just let them know that it is not fully automated. Although they can log into the MMRA website immediately, they need to be manually processed. This could take up to a week.**

If you haven't updated your MMRA profile in a while, now is the time! Log into < MMRA.ORG > to do so.

Previous issues of the MMRA Newsletter are available at: MMRA Newsletter Archive.
They are also available at DLARC: https://archive.org/details/minuteman-repeater-association

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Nets, etc., on the MMRA System

MMRA Technical Information and Other Stuff Net
Our weekly club net on most of the MMRA repeaters, Tuesday night at 8:00 pm local.

Heavy Hitters Traffic Net
This ARRL NTS net is active on our repeaters Sunday to Friday evenings from 9:45—11 PM and Saturday from 10-11.

Coast Guard Net
Sundays at 11:00 AM local.

ARES Net
First Monday at 8:30 PM local.

ARRL Audio News
Sundays at 7 PM local
< https://www.mmra.org/repeaters/repeater_linking.html >

NEW ENGLAND SCI-TECH

New England Sci-Tech Inc is a new 501(c)(3) STEM education center, amateur radio training center, and maker space located at 16 Tech Circle, Natick. It is home to New England Amateur Radio Inc (NE1AR) and the youth radio club Sci-Tech Amateur Radio Society (STARS). NE Sci-Tech welcomes memberships and donations via www.NESciTech.org or www.NE1AR.org.

Get connected on the MMRA Repeater System ~ Dave Hornbaker N1DCH

What is the best way to get connected on the MMRA repeater system? Try announcing yourself! Just say your call sign followed by "listening". If you want, you can include the last 3 digits of the repeater frequency. For example, "N1DCH listening" or maybe "N1DCH listening on 925", you may very well get a response. Try to connect by announcing yourself several times.

Most of the time, Marlborough Hub1 (449.925) is linked to the following repeaters, Boston (146.820), North Reading (446.775 *and* 146.715), Mendon (146.610), Lowell (442.250), and Hopkinton (447.775.) Remember that when the repeaters are linked, you need to wait two or three seconds after you key up and before you speak. This is especially important on the TIaOS net on Tuesday when most of the repeaters are linked.

You can also link (and delink) the repeaters yourself. See the information you received when you became a member, or check the User Control Codes once you log into the MMRA website.

Try one of the non-linked repeaters too. There are Hams monitoring them as well. For more information on the repeater network and how it is linked at various times, check out https://mmra.org/repeaters/repeater_linking.html.